

Animal Killing and Postdomestic Meat Production

Frédéric Leroy¹  · Istvan Praet²

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Abstract The act of animal killing affects the human psyche in manners that are culturally contingent. Throughout history, societal attitudes towards the taking of animal lives have mostly been based on deference and/or dominion. Postdomestic societies have evolved in fundamentally different ways. Meat production is abundant yet concealed, animals are categorized and stereotyped, and slaughter has become a highly disquieting activity. Increased awareness of postdomestic meat production systems raises a moral polemic and provokes disgust in some consumer segments. Overall, a heterogeneous set of solutions has emerged to deal with the societal upset and cognitive dissonance caused by animal slaughter. This includes the so-called *carnism* approach, a rise in animal welfare programs, a market demand for reassuring narratives (“story meat”), a rehabilitation of the *metier* of farmers and butchers, crowd butchering, neo-ritualism and home slaughter, the biotechnological exploration of “cultured meat” and “pain-free meat”, entomophagy, “meatless meat”, and the increasing proliferation of vegan and vegetarian lifestyles.

Keywords Meat · Slaughter · Animal welfare · Society · Vegetarianism · Veganism · Human–animal studies

✉ Frédéric Leroy
fleroy@vub.ac.be

¹ Research Group of Industrial Microbiology and Food Biotechnology (IMDO), Faculty of Sciences and Bioengineering Sciences, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussels, Belgium

² Department of Life Sciences, Whitelands College, University of Roehampton, Holybourne Avenue, London SW15 4JD, UK

Introduction

The procurement, sharing, and eating of meat are important biosocial activities (Fischler 2001; Leroy and Praet 2015). They require contact with animals, involving hunting or herding as well as slaughtering. All human societies have coexisted to a certain degree with animals, of which the interrelations are explored by the recent discipline of anthrozoology (Bulliet 2005; DeMello 2012; Waldau 2013). Hereby, the animals do not only act as economic resources but also as social constructs. Examples include the dichotomisation into animals that are either pets or livestock, natural or cultural, noble or evil, and edible or non-edible (Holloway 2001; Joy 2010).

A primordial facet of human–animal interactions relates to animal killing for meat production (Birlouez et al. 2014; Pollan 2006). Although not universally regarded as pejorative, the act of slaughter is sometimes felt as a sort of “dark event” (Fischler 2001; Hamerton-Kelly 1987). The traditional killing of a piglet, for example, involves throat cutting, long-lasting squealing and bloodletting, scalding, offal collection, and hacking of the corpse (McWilliams 2005). In some cultural settings, the physical violence of this act can be highly upsetting and it may result in moral crisis if not properly embedded in cultural praxis (Joy 2010; Tian et al. 2016). It has therefore been suggested that the sharing of meat may contribute to the partaking of culpability for the killing of a living being (Birlouez et al. 2014; Fischler 2001). The latter hypothesis is of course not all-explanatory, as meat sharing can serve communal and hierarchical purposes too (Leroy and Praet 2015). Clearly, attitudes and practices are context-dependent, varying between and within societies. The main aspects of this variability will be outlined in the next section, as this is primordial to understanding the idiosyncratic case of Western-type, post-domestic societies.

Societal Views on Animal Killing: A Cultural Variable

In general terms, the mechanisms by which humans deal with animal killing and meat-eating differ between *hunter-gatherer*, *domestic*, and *postdomestic* societies (Fig. 1). This distinction, proposed by Bulliet (2005), serves here merely as a classificatory tool. It is not to be seen as a teleological differentiation and overlap between the different categories occurs. Hunting practices, for instance, have been significantly maintained in domestic and even in postdomestic environments (Higman 2012). In agreement with McCance (2013), we wish to underline that more input from specialized scholarship is needed to avoid overgeneralization. Even if some of the behavioural patterns related to animal killing may or may not be situated along a continuum (Bakker 2013; Hamerton-Kelly 1987), the micro-dynamics of stability and change need further attention (Reed 2013).

In hunter-gatherer societies, animals play a key role in the prevailing cosmologies (Ingold 1994; Serpell and Paul 1994; Shepard 1998). The act of hunting is socially important and leads to celebrative rites and story-telling

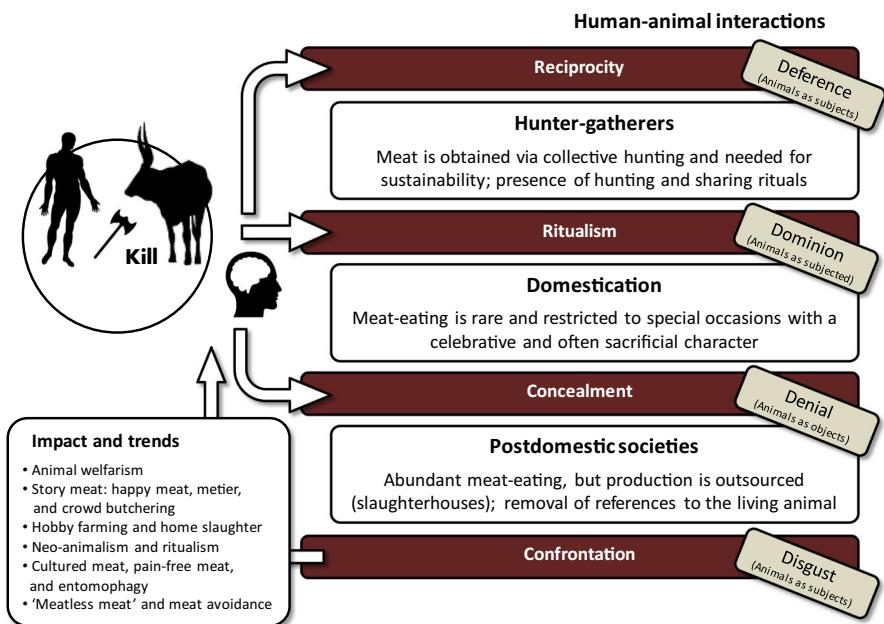


Fig. 1 Overview of human–animal interactions related to the act of animal killing and its context dependency

(DeMello 2012; Leroy and Praet 2015). The maintenance of trustful relationships is crucial and often the animals' permission or pardon is sought for (Ingold 1994; Kemmerer 2006; Serpell and Paul 1994). However, in societies where animal domestication has been adopted, a transition to dominion generally seems to have taken place (Ingold 1994; Waldauf 2013). This process does not have to imply non-respectfulness. Animals receive compassion and have prominent standing, often due to their religious associations with (pro)creation and death, even if these notions can become more tangential over time (McCance 2013). In a domesticated context, slaughter thus often involves elaborated sacrificial ceremonies (Bakker 2013; Leroy and Praet 2015). On the whole, contact with animals is a normal, intimate condition of life, whereas meat-eating is usually reduced to a sporadic treat (Bulliet 2005; Higman 2012).

As discussed below, the postdomestic *modus operandi* differs sharply from the above; one could argue that it is characterized by denial and, increasingly, by disgust. One of the principal anthrozoological challenges is to better comprehend why the act of meat-eating has become so morally problematic to a considerable number of Westerners during the last hundred years (Pollan 2006). We wish to specify that the present study focuses on the concept of animal killing rather than on general animal welfare and that it will not deal with (moral) objections to the environmental, economic, and nutritional aspects of meat-eating.

Moral Attitudes and Practices in Post-domestic Societies

Moral Attitudes

Moral agitation regarding animal killing in post-domestic societies is not to be disconnected from its historical trajectory. It can be traced back to Ancient Greece and theriophilic thinkers as Pythagoras, Porphyry of Tyre, and Theophrastus. The Aristotelian idea of ontological supremacy of humans over animals nevertheless came to prevail during most of the Christian era (Korthals 2004; Waldau 2013). In the Latin West, animals were often considered soulless and destined to serve humankind, possibly as a practical construct to place the problematic act of animal killing beyond moral concern (Serpell and Paul 1994). The widely documented acts of animal cruelty in eighteenth century Britain may have been related to the fact that beliefs in human dominance then reached their apogee (Fiddes 1991). During the same period, however, the debate on animal killing started to become more complex; we refer to the studies by Maehle (1994) and Korthals (2004) for a detailed overview. Although leading philosophers as Thomas Hobbes, John Locke, and Immanuel Kant still rejected the concept of animal reason and moral standing, they did not go as far as René Descartes in viewing animals as mere automata. Kant and Locke, for instance, took the stand that cruelty to animals is to be avoided, but merely because it damages humanity. In contrast, Charles Bonnet, Humphrey Primatt, and the utilitarian Jeremy Bentham stated that animals are sentient beings that need protection against suffering, even if they may be lacking reason. Whereas in the nineteenth century Arthur Schopenhauer still justified a higher moral concern for human suffering based on superior intelligence, the human–animal divide got blurred by Darwin's theory (DeGrazia 2002; McWilliams 2015). A spectrum of mental and emotional capacities appeared, upon which suffragist and religiously-inspired animal right movements initiated their protest against animal vivisection in nineteenth century England (Maehle 1994; Scully 2002). Arguably, the sentimental depiction of animals in popular culture may have added to this, as well as bourgeois pet-keeping (Leahy 1991; Serpell and Paul 1994). During the '70s and '80s of the next century, the evolution towards animal rights culminated after a lengthy process in the influential works by Singer (1975), Griffin (1976), and Regan (1983), instigating the rise of a protectionist movements (Kemmerer 2006; McCance 2013). Here, we limit ourselves to a sketching of the moral window on human–animal relationships in the modern West, but only as far as the act of animal killing is concerned.

Analytical argumentation in defence of animal protection requires insight into the moral standing, mental lives, and interests of animals (DeGrazia 2002). A widespread method consists of searching for signs of *emotion* in the eye expression of animals, including manifestations of joy, satisfaction, and vulnerability (Baur 2008; McWilliams 2015). Such approaches, as well as the entailing attribution of self-conscious traits and beliefs, have been dismissed as anthropomorphic and sentimental biases (Coeckelbergh and Gunkel 2014; Leahy 1991), although "critical" anthropomorphism has often been defended (Korsgaard 2007; Korthals

2004; McWilliams 2015; Piggins and Phillips 1998; Waldau 2013). Daston and Mitman (2004) have suggested that “a more symmetric program of scientific inquiry into what animal and human cognitive capacities have in common would worry as much about committing the error of “anthropodenial” (underestimating commonalities) as “anthropomorphism” (overestimating them).” In other words, self-avowed anti-sentimentalists may be as biased as those they denounce. Some have pointed out that the animal gaze could be considered as an invitation to *respond* and to explore (Coeckelbergh and Gunkel 2014; Foer 2009; Haraway 2008). Pollan (2006), in contrast, hypothesizes that frequent eye contact in domestic societies acted as a daily reminder of Otherness, facilitating instead of hampering the act of slaughter. Trying to differentiate between “non-unique” and “unique” human emotions is of course highly subjective, eventually leading to a philosophical minefield.

To circumvent partiality, the delineation of moral status is now often done on the basis of what some believe to be more trustworthy markers, including aspects of sentience and self-awareness (DeGrazia 2002). Sentience has been defined as the capacity to respond to stimuli and to have conscious sensations, rather than non-conscious nociceptions of local tissue damage by the neural system (Baggini 2014). The evidence for sentience is usually persuasive in non-human vertebrates too, albeit on a less reflective and language-laden level, but not in the most “primitive” invertebrates (DeGrazia 2002). For some authors, however, sentience is not sufficient for moral status (Hsiao 2015). Beyond sentience, the existence of animal self-awareness is an even thornier issue (Piggins and Phillips 1998). Although the concept is ill-defined, it is being explored by researchers in cognitive ethology, who deal with tool use, symbolism, purposive thinking, metacognition, uncertainty response, and social sophistication (DeMello 2012). Taken together, the evidence needed to draw a confident line between animals that are either sentient (or, for that matter, self-aware) or not is controversial (Korthals 2004; Leahy 1991; Piggins and Phillips 1998).

The question thus arises if the divergence between humans and animals is just of degree, both being labelled as subjects-of-a-life by Regan (1983), or rather based on *essence*. Relative comparisons are based on elements of capacity, i.e. “patency” (i.e., the capacity to suffer) or “agency” (i.e., the possession of intellectual abilities), although the final evaluation of moral standing is also affected by the animal’s perceived “harmfulness” (Piazza et al. 2014). According to the capacities perspective, a problematic differential scale reflecting the wrongness of killing (re)appears, running down from humans over vertebrates to animals that are positioned “lower” in the evolutionary tree (reminiscent of the *scala naturae*) (McCance 2013). Such an approach may seem surprising, as this scale does not agree with the groups of animals used for consumption—pigs, in particular, are considered quite similar on a biological level (Coeckelbergh and Gunkel 2014). While some scholars have defined specific groups that meet criteria of legal personhood—such as apes, dolphins, and parrots (Wise 2002)—others maintain that the human overlap with domesticated animals is minor (Piggins and Phillips 1998). And those of a more essentialist bent claim that the issue may not be so much a matter of neurological correlates or indexical aspects of consciousness, as one

related to the supposedly unique linguistic abilities present in humans (Deacon 1997). This view not only goes back to Aristotle and his legacy, but is also shared by more recent philosophers such as Martin Heidegger—think of his discourses on the “world-poverty” of animals, for example (Krell 2013). Whether language functions as a prerequisite for moral status or not remains contested (Piggins and Phillips 1998; Kemmerer 2006), even if some abstract thinking is needed to generate existential angst (DeGrazia 2002). This leads to a point where concepts as pain lose their meaning, at least from a Wittgensteinian perspective (Leahy 1991). In contrast, Griffin (1976) is among those that defend the presence of self-awareness in animals based on non-verbal reflection. The essentialist position has been criticized as speciesist, anthropocentric, dualist, and thus as a search for a meaningless Big Gap based on human arrogance (Haraway 2008; Kemmerer 2006; Krell 2013; McCance 2013). Others remain agnostic and propagate a careful approach, in which the most responsible choice would be to act as *if* animals can suffer, even if it is uncertain if they do (McWilliams 2015). Moreover, the more controversial metaphysical arguments can be steered clear of if one falls back onto the relatively uncontested core moral principle of nonmaleficence (Rossi and Garner 2014).

In any case, the capacity for language and symbolic thought occupy a central role in the debate, in particular when related to the capacity to suffer and to hold beliefs and expectations. Its absence does not necessarily imply that animals have no intentions and cannot imagine experiences in a near future, but rather that they lack the linguistic mnemonics and abilities to construct narratives (Deacon 1997). Baggini (2014), for instance, only considers severe pain by accumulation as truly tormenting, as he claims that animals have a poor capacity to create “narratives of suffering”. From this point of view, a quick and clean kill combined with a pleasant life would lead to less pain over a lifetime than experienced by animals in the wild. Singer (1975) belongs to those scholars that focus on the minimization of suffering rather than on the issue of taking lives. On the same grounds, it remains to be clarified if the elimination of opportunities, due to caging or premature death, is to be considered as harmful or not (DeGrazia 2002; Regan 1983; Renton 2013; Saja 2013). Some deem that animals simply abide and do not value their future (Baggini 2014). In this respect, it is worth noting that life spans in husbandry have sharply decreased over time. For cattle with a natural life span of about 20 years or more, the age of slaughter went from 4 to 5 years in the early twentieth century to 2–3 years in the 1950s and, finally, to 12–16 months at present (Pollan 2006). Chickens have a natural life span of about 10 years, whereas modern broilers are killed at around 6 weeks (Foer 2009).

These various theories may very well be based on an anthropocentric, “illusionary properties methodology” which defines ontological “most like us” criteria for moral standing (McCance 2013). Inspired by Emmanuel Levinas and Jacques Derrida (Krell 2013), some scholars have tried to offer an alternative look on the matter (Coeckelbergh and Gunkel 2014; Holloway 2001). In contrast to (Anglo-American) analytical approaches that calculate interest based on human-like capacities, they take an anti-dualist stand that celebrates differences and focuses on the generation of immediate self-involvement upon *facing* the animal Other in practical social settings (McCance 2013). This situational ethics approach offers

interesting perspectives by valuing relations between groups of beings in cross-cultural contexts rather than on the conceptualisation of individual beings. It relates to ethically charged and lived encounters between humans and non-humans (Haraway 2008), based on care, affection, and responsibility rather than on morality (McCance 2013).

Practices

During the mid-nineteenth century, some of the urbanizing Western populations developed a craving for meat resulting in a heavy industrialization of the production chain (Leroy and Degreef 2015; Renton 2013). This is best illustrated by the spectacular expansion of industrial beef farming and meatpacking in the U.S., followed by Argentina, Australia, and New Zealand [for an overview, we refer to Ogle (2013)]. Urbanization also led to occupational specialization and disengagement of the general public in food production (DeMello 2012; Foer 2009), especially in England (Bulliet 2005). In the U.S., the transit from rural to urban life was somewhat slower but all the same resulted in drop of the population that lived in farms from about 93% in 1790, over 40% in 1900, to 20% in the 1930s, and less than 2% by 1990 (Bulliet 2005; Foer 2009). In the early twentieth century, livestock and slaughter activities in the open were no longer considered compatible with American city life; similar shifts had already occurred in Napoleonic France and other European countries (Reed 2013). The supposedly gory character of animal killing and butchering was said to be harmful to the youth and the activity was labelled as unhygienic by the bourgeoisie, a view evocative of the early law of 1488 prohibiting slaughter within the city walls of London to avoid blood and foulness (DeMello 2012). Meat production thus evolved into an outsourced and confined activity performed in slaughterhouses and along “disassembly lines” (Belasco 2008; Leroy and Degreef 2015), eventually moving out of the cities in the 1960s (Ogle 2013). In the process, the contact between the general public in Western countries and its meat-providing animals was reduced to a minimum. For instance, whereas only 20% of the students in Columbia University declared to have witnessed some kind of animal slaughter, this number amounted to 90% for students from Beirut (Bulliet 2005). Yet, the concealment of slaughter also seems to win ground in non-Western countries, as documented by the pressure of local authorities on butchers in Calcutta to introduce curtains in front of their shops so that the purportedly gruesome scenes will not “draw out cruel instincts among children” (Bulliet 2005). More dedicated studies are needed to further analyse the global status and evolution of this trend in urban environments.

Animal killing in postdomestic societies is mostly done according to economic rationales, which is as soon as appropriate to maximize meat production efficiency, but also to eliminate non-functional animals such as male layer chicks (DeMello 2012). Meat is commonly packed in Styrofoam and plastic, replacing the once customary brown butcher paper and maximally devoid of elements that hint at its animal origin (Belasco 2008; Bulliet 2005; Hoogland et al. 2005; Leroy and Degreef 2015). This may also partially explain why minced meat, where most of the muscle structure has been obscured, is such a popular product (Holm and Mohl 2000).

Skinned rabbits and parsley-decorated veal heads are no longer a familiar sight in butcher shops, as Westerners have moved from a “zoophagic” to a “sarcophagic” way of life (Fischler 2001). Even the traditional use of a cardboard, cartoonish pig outside the shops seems to be disappearing for the same reasons (Korthals 2004). This is in obvious contrast with medieval societies, when dead animals were often brought and carved on the table of the upper classes (Reed 2013). Already during the nineteenth century, Americans lost their interest in the more explicit animal parts, such as tongue and brain, which at the time were still valued in other countries (Ogle 2013). The reasons are cultural, and possibly have to do with perceived quality, safety, and/or the emergence of disgust (see below). With respect to the UK, the yearly offal consumption decreased from 1.1 kg out of 54 kg of meat in 1986 to 0.3 kg per 58 kg of meat in 2008, most of the offal eaters being probably over 60 years old (Fairlie 2010). Such specific parts are often exported to places that still value them, as is the case in East Asia where relatively high prices can be paid for the offal of pigs and cows (Higman 2012). In sum, eating meat is no longer framed as an interaction with animals (Baur 2008), but rather as an unquestioned contact with food (Bratanova et al. 2011). This attitude has been labelled *carnism* and is said by some to be propagated by agribusiness (Joy 2010). Ritualistic killing, gratefulness, and ceremonial approaches have become largely irrelevant to Westerners (Hoogland et al. 2005; Pollan 2006), even though there are of course exceptions. One could think of religious minorities that value kosher or halal meats, or of self-proclaimed defenders of the hunting heritage. But while the material exploitation of animals increased throughout Western history, their spiritual functions seem to have declined overall (Bulliet 2005; Rimas and Fraser 2008). This is a very different situation from the one encountered in hunter-gatherer and domestic societies outlined above, where the animal is acknowledged prior to the killing and all of its parts are used and shared (Belasco 2008; DeMello 2012).

Consumer Psychology in Post-domestic Societies

Ambivalence

Despite the above-mentioned rise of moral aversion towards animal killing, postdomestic societies are very fond of meat eating, albeit with a feeling of ambivalence and cognitive dissonance. This situation has been coined as the “meat paradox” (Loughnan et al. 2010). It refers to the idea that negative feelings about meat are in most cases efficiently countered by mechanisms of rationalization and moral disengagement (Bastian et al. 2012; Bratanova et al. 2011; DeMello 2012; Graça et al. 2014; Mitchell 2011; Tian et al. 2016). In a recent study, five major dimensions of moral disengagement have been identified, including means-ends justifications, desensitization, denial of negative consequences, diffused responsibility, and reduced perceived choice (Graça et al. 2016). These mechanisms are especially manifest in subjects that perceive meat as “natural”, “normal”, “necessary”, and “nice” (Joy 2010; Piazza et al. 2015), and that often value masculinity and social hierarchy (Dhont and Hodson 2014; Leroy and Praet 2015;

Loughnan et al. 2014). Meat-eating is not so much justified by referring to taste or nutritional value, but also to divine or human intent, tradition and moderation, and biological imperatives (Belasco 2008).

On average, omnivores seem to downgrade the presence of human-like emotions and characteristics in animals, especially in edible species (Bilewicz et al. 2011). Childhood pet owners, in particular, seem to rely on these mechanisms to overcome their higher empathy towards animals (Rothgerber and Mican 2014). That the same people who foster affective relationships with companion animals act as if meat-producing animals were abstract production units has often been described as odd (Baur 2008; Joy 2010). This attitude has led to a problematic pet/food distinction, common in most if not all Western countries (DeMello 2012; Serpell and Paul 1994). Companion animals are of course also subjected to domination and are meant to exist for human pleasure (Holloway 2001; Waldau 2013). The categorization of animals as pets and livestock is thus serving as a functional rationalization mechanism (Bratanova et al. 2011). Generally, childhood pet ownership is a poor predictor of meat-consuming behaviour (Rothgerber and Mican 2014) and non-vegan pet owners do not automatically have an enhanced concern for harming other animals (Rothgerber 2013). Or, as put by Foer (2009), the treatment of livestock would often be illegal if inflicted on a pet. The distinction between both categories can nevertheless be both strict and confusing (e.g., rabbits), as is the case in the United States, where the U.S. Department of Agriculture has introduced the “mixed-use animals” label despite the strong emotional separation between the categories (DeMello 2012). In specific cases as hobby-farming (see below), the disparity between pets and livestock can become blurred (Holloway 2001).

Confrontation and the Moral Psychology of Disgust

Due to the “information revolution”, confrontations with the contemporary practices of industrial meat production inevitably take place (Fiddes 1991). Even when forewarned, exposure to the act of slaughter and sometimes even to raw meat or animal organs may lead to visceral disgust, shame, and guilt (Bulliet 2005; DeMello 2012). In vegetarians it has been shown that the display of meat pictures physically alters brain processes (Stockburger et al. 2009). Disgust can be related to anything that reminds humans of their own mortality and animal nature, although other factors such as “aversive texture” are also important (Fischler 2001; Kubberød et al. 2006, Martins and Pliner 2006; Rozin et al. 1997). Perceived animal intelligence is therefore a strong predictor of disgust, much more than the capacities for suffering or emotional bonding (Ruby and Heine 2012). Context dependency is of course not to be neglected: although Westerners regard primates as inedible, monkeys are part of the diet of many Africans and Amazonian Indians (Fiddes 1991). In addition, animals such as insects and frogs may not be perceived as close to man but can nevertheless lead to strong feelings of disgust in some cultures (Fischler 2001). Although disgust is to be considered as a fundamental moral emotion, its manifestation is thus largely subjected to cultural effects. Freudian interpretation suggests that the same triggers that elucidate disgust can even generate fascination (Pollan 2013), which is often solicited in contemporary “meat

art” to generate controversy and expose hypocrisy (DeMello 2012; Waldau 2013; Leroy and Praet 2015). The fact that no other item of food leads so often to reactions of disgust is remarkable (DeMello 2012), and in apparent contradiction with speculations about meat craving (Fiddes 1991; Fischler 2001; Leroy and Praet 2015). Western females seem to be more vulnerable to this effect (Fessler et al. 2003; Ruby and Heine 2012). The reason is unknown but it has been tentatively linked to higher empathy, disgust-sensitivity, difficulties of teenage girls in coping with menstruation, and/or metonymical linking to the exploitation and abuse of women (Kenyon and Barker 1998; DeMello 2012). Disgust is all the more pronounced when meat avoidance is combined with ideological points of view (Rozin et al. 1997), whereby the causal direction between disgust and moral stances is a point of interest (Fessler et al. 2003). Negative attitudes and disgust are also present, at least to a certain extent, in people without coherent moral frameworks and that do not refrain from meat-eating (Holm and Mohl 2000). The degree of disgust and the way it is provoked by different types of meat thus depends on the individual and his cultural origins (Fiddes 1991; Ruby and Heine 2012; Tian et al. 2016), whereby empathy often correlates with meat avoidance (Rothgerber and Mican 2014). Moreover, the sensation may be attenuated by continued exposure, acute hunger, or emphasis on deliciousness (Tian et al. 2016).

In the small minority professionally involved in animal killing, confrontational processes lead to psychic numbing (Bulliet 2005; DeMello 2012). This is beautifully documented in the monograph *Slaughterhouse Blues: The Meat and Poultry Industry in North America* by Stull and Broadway (2004). The dissociative psychological processes involved are typically based on objectification, deindividuation, and dichotomization (Joy 2010). As an example, children that grow up on farms are often prohibited to name new-born livestock (Coeckelbergh and Gunkel 2014). Naming an animal meddles with its categorization, giving it a pet rather than a meat status. Also, affectionate distancing between ranchers and their cattle can be observed as the latter approach slaughter time (DeMello 2012). The compassion that farmers have for their animals can nevertheless be compatible with the act of killing them (Baggini 2014; Friend 2008; Holloway 2001; Pollan 2006). Hardening mechanisms such as compassion fatigue and moral schizophrenia are mostly at work where graphic exposure occurs frequently (Eisnitz 1997), and much less so when the act leaves time for reflection (Pollan 2006). Frequent exposure to animal killing has indeed been associated with burnout, post-traumatic stress disorder, alcoholism, and sadism due to desensitization, as sometimes described for workers that are active on the kill floor (Eisnitz 1997; Joy 2010; DeMello 2012). As a slaughterhouse worker illustratively stated: “The killing room really does something to your mind—all that blood, killing so many times, over and over again” (Baur 2008). Killing frequencies are indeed overwhelming, leading to the slaughter of ten billion animals per year in the U.S. alone (Eisnitz 1997; Joy 2010; McWilliams 2015), with hundreds to thousands of kills per hour in individual plants (Scully 2002). The most striking numbers are related to poultry, representing the majority of all killed land animals. For cattle, a line speed increase of 175–400 animals per hour has taken place in some plants during the last 25 years (Schlosser 2013).

The Evolving Postdomestic Paradigm

A small yet significant and poorly quantified proportion of the contemporary Western populations is shunning away from conventional meat production systems, looking for alternatives. The latter include a set of solutions ranging from increased animal welfarism, story meat, home farming and slaughter, neo-animalism and ritualism, cultured meat, pain-free meat, entomophagy, meatless meat, to plain meat avoidance (Fig. 1). Some of these strategies are manifest in postdomestic societies since several decades, whereas others are fairly recent or even futuristic. For most, the precise numbers of adherents are uncertain and more dedicated research would be needed to quantify their true impact and trends.

Animal Welfarism

The “compassionate carnivore” or “conscientious omnivore” perspective holds that animal life should be protected against suffering, without overstating it or giving up meat-eating (Baggini 2014; Friend 2008; Pollan 2002; Rothgerber 2015). This is not the place to elaborate on the often adverse practices of industrial animal production [for an evaluation see Rossi and Garner (2014)]. Yet, establishing a moral footprint of farmed animals based on welfare is complicated and should not only focus on life quality but also on efficiency parameters, such as body weight per killed animal and life duration in farms (Saja 2013).

Demands for welfarism are certainly not novel and have been legally formalized since the nineteenth century. Yet, they are expected to be reinforced upon increased transparency of the meat chain, albeit with a dependency on the value system of the consumer (Hoogland et al. 2005). In contrast to vegetarians, conscientious omnivores tend to stray more from their diet without major feelings of guilt involved (Rothgerber 2015). To increase compatibility of industrial meat production with societal expectations, legislative and technological responses have been triggered to increase animal welfare. In addition to established regulations (e.g., the Swedish Animal Welfare Act from 1988), a continuous quest to obtain novel legal status for animals is noticeable, for instance with respect to their “ownership” by humans (Birlouez et al. 2014). On a technological level, animal welfare is aimed at by improved housing, feed, and health, the allowance of social behaviour, superior stunning practices, and a reduction of coercion and fear (Blokhuis et al. 2008).

As a result of the demand for more ethical meat production, measures are being taken by the food industry. One of the motives is to avoid being publically targeted by militant groups as PETA (Foer 2009). Companies as McDonald’s, Burger King, and Kentucky Fried Chicken have committed themselves to animal welfare improvement, relying on so-called “animal welfare advisory committees” (DeMello 2012; Ogle 2013; Rimas and Fraser 2008). Yet, this is only implemented to a certain degree as it may compromise the product consistency (allegedly) required by the market (Scully 2002). It also comes with a higher price, although for some welfare issues the cost increments may not necessarily be that high (Appleby 2005). Moreover, consumer behaviour is to be considered as value-oriented rather than

price-oriented, even if economic constraints often overrule purchase intent (Napolitano et al. 2010). The meat industry's efforts nevertheless continue to be criticized as meaningless facades (Foer 2009). Welfare-based logos, such as “free-range chicken” are used, although they often are unveiled as industrial marketing artefacts based on questionable standards (Fiddes 1991). They often lead to false reassurance as they are imperfect substitutes for direct observation (Baggini 2014; Pollan 2006). On the longer term, this may damage the concept of welfare certification altogether, as consumers are seeking for reliable extrinsic cues (Napolitano et al. 2010).

Story Meat: Happy Meat, Metier, and Crowd Butchering

Welfare approaches imply that animal production is performed according to a contract between humans and farm animals, by which the latter profit from care and shelter (Korthals 2004). Besides the fact that this is not a symmetric deal, it entails that the animal partner indeed lives a satisfactory life and that the human partner feels reassured about it. In recent years an increased demand for “happy meat” has become noticeable (Pollan 2006; Friend 2008). Already during the 1970s–‘80s, the use of meat from animals that have had a “wholesome” life became fashionable in Californian restaurants propagating a kind of countercuisine (Ogle 2013). Contemporary examples include the use of bucolic images of joyful animals, their natural diets and environment, and responsible farmers, whether or not representative for the actual practice involved (McWilliams 2015). Grass-fed beef, free-range chickens, and free-range pigs raised in small-scale farms are recurring images, often situated in a general framework of sustainability. This involves, for instance, the raising of sows in social groups with access to the outdoors (Foer 2009).

Overall, there is not only a tendency to re-appreciate the individualism of farm animals, but also of the farmers that raise them (Friend 2008). In this process, the butcher also can act as an important and trusted raconteur (Leroy and Degreef 2015). In Belgium, for instance, the celebrated butcher Hendrik Dierendonck opened a restaurant where all edible parts of the animal are being served, as to re-familiarize the public with honourable aspects of butchering and to improve ecological awareness (De Standaard 2014). Likewise, a recent trend of “crowd butchering” has emerged, with consumers purchasing parts of an animal through an on-line website interface connected to small-scale farmers (e.g., the Belgian initiative www.deeleenkoe.be). Slaughter is only carried out if the whole animal has been sold, leading to a closer involvement of consumers with the meat production process, less waste, and stimulation of the farmer's and butcher's *metier*.

One may wonder if such trends are not more about the human need for story-telling rather than the actual welfare of the animals. References to rural idylls are being made and popular chefs and foodies are incorporating story meat in their gastronomic discourses. In the U.S., nothing less than rural “American” values seem to be at play (Foer 2009). The search for so-called “heritage” animals seems to point towards a form of neo-romanticism and a longing for origins and lost innocence. It conveniently ignores the practical, everyday brutality of the “authentic” peasant who castrates, brands, and hobs his animals (Holloway

2001). As a result, the concept has been criticised as yet another variant of carnism, by which the act of meat-eating is rationalised based on reassuring golden-age narratives of “happiness”. It has been stigmatised as a “boutique endeavour” (McWilliams 2009) and “agricultural pornography” (McWilliams 2015), and blamed for evoking a false sense of meaningful participation in the reformation of the production system (McWilliams 2015).

“Story-meat” or “happy meat” can also be interpreted as examples of an animal rights discourse premised on the notion of gradual progress, and as yet another step furthering animal welfare. Yet, this gradualistic approach is not always sufficiently in tune with more uncompromising stances that aim to abolish rather than alleviate all forms of animal suffering. For the latter, a “light” version of cruelty is still cruelty. The real challenge, then, is to find ways to build bridges between both stances.

Hobby Farming and Home Slaughter

Still related to the concept of welfare and the construction of narratives is the decision to accept and confront the killing process, for instance by visiting an abattoir or even by participating in (home) slaughter. In the U.S., several students spend summer internships on organic farms where they learn to slaughter animals with a knife (McWilliams 2005). Hobby farmers often perform home slaughter as a manner to get back in touch with tradition. They refer to caring ways by which the animals were raised as a justification for consumption, although they are still objectified in terms of eating quality, wholesomeness, and economic value (Holloway 2001). Personal performance of slaughter is driven by a multitude of reasons, ranging from the economic and political motives to ethical, ecological, and spiritual ones (Pollan 2006). Some have interpreted this as the embodiment of discourses in animals, transforming them into objects of power-knowledge through Foucauldian processes (Holloway 2001). Usually it is framed as a quest to assume direct and conscious responsibility for the act of meat-eating, rather than leaving it to factory farming. The well-known novelist Jeanette Winterson, for instance, started a row on Twitter when she posted pictures of a rabbit that she had killed, skinned, and cooked herself (Gold 2014). Baggini (2014), in contrast, is in favour of maintaining the outsourcing of slaughter to the hard-hearted, as the activity can be highly unpleasant and even traumatic. Still, many advocate a closer engagement with the slaughtering process in order to remove sentimentality and ignorance, for instance by talking to professionals involved in the rearing and killing of animals (Baggini 2014). Foer (2009), however, considers it as just another way of ignoring the moral issues of animal killing, creating a forged peace of mind.

Neo-Animalism and Ritualism

Opposed to vegan ideology, the eating of meat is seen by some as a necessity to affirm both our animal nature and omnivore humanity (“carnivore imperative”), preferably with accompanying ritual (Lestel 2011). To avoid possible upset, the food columnist Digby Anderson has suggested to include anti-sentimental exercises

in the education of children, for instance by killing small animals before the age of ten [quoted in Scully (2002)]. In this context, an educational project focusing on the Stone Age in a primary school in the German municipality of Ratekau caused a massive controversy when a rabbit was slaughtered on the playground, after the pupils had to thank the animal for its meat (Lüpke-Narberhaus 2011). It echoes the suggestions by Shepard (1998) to reintroduce elements of Pleistocene behaviour, such as the all-age exposure to butchering scenes and the rehabilitation of hunting and celebrative meat-eating. This is viewed as being part of a “natural” order, whereby there seems to be a temptation to search for the mythic origins of sacrifice as if it were a unified category (Reed 2013). Present-day hunters do often romanticize their activities as an authentic return to nature and to earlier and less problematic modes of being human. The amount of ceremony involved in contemporary hunting is remarkable, and often appears to be associated with a deep sense of respect to the animal being slain (Pollan 2006). Similarly, bull fighting is placed in a continuum stretching back to prehistory and valued as such (Rimas and Fraser 2008). Reed (2013) advanced the interesting observation that scholarly attention to sacrificial rituals as a symbol of “primitivity” emerged during the public concealment of slaughter in the late nineteenth century. This makes the current re-appreciation of ritualism as a form of neo-romanticism and a search for lost innocence all the more captivating. Meat-eating, ritual, and lifestyle are often blended into transgressive practices, for instance by exclusively eating raw meat and organs within a so-called “Paleodiet” (e.g., <http://www.rawpaleodietforum.com>). Such attitudes are reminiscent of the omophagic cult of Dionysos which may have to be considered as an act of rebellion against the rigidity of the prevailing social order (Fischler 2001). During the twentieth century, the notion developed that many ailments of the industrial and secular West are due to shallowness and ritual impoverishment (Stephenson 2015). Of course, this is illusionary, as myth and ritual remain omnipresent even if camouflaged (Eliade 1959/1987).

It is not unlikely that the ritualisation of animal killing will be on the rise in Western countries, partially due to the increasing importance of Islamic worldviews. For Muslims, according to Benkheira (2000), ritual slaughter has the purpose to kill the animal and transform it into meat while preventing that it is being transformed into a cadaver. This is not only a way to transform the animal into a “substance in the service of life rather than in the service of death”, but also to subject it to humanization in an open community setting, to consecrate it to the divine, and to express sentiments of compassion. Religion is often seen as a fallback and ultimate arbiter of ethical code, including the case of animal killing (Fiddes 1991). Nonetheless, spiritual systems should not be considered as static as they are subjected to change, developing new ideals of “piety, practice, and authority” (Reed 2013). Although ritualistic practices and views may rely on a legacy of religion, identity-shaping discourses, and received ideas about human nature, they are part of creative and transformative processes for better or worse (Stephenson 2015). Their shape and importance in societies to come is therefore difficult to predict, let alone the role they will play in the attitudes and practices related to meat-eating.

Cultured Meat, Pain-Free Meat, and Entomophagy

In the present day and age it has become conceivable to set up industrial meat production systems based on biotechnological innovation without having to rely on the slaughtering of sentient animals. A first option, already suggested by Winston Churchill in 1932 and often addressed in science fiction, consist of culturing meat in the laboratory based on myoblastic cell lines (Lestel 2011). The opportunities are numerous, including the culturing of functional and designer meats, exotic meats, or even human flesh as a “cannibalistic” niche product (Fairlie 2010). The latter has been exemplified by the (likely satiric but nevertheless symptomatic) “Bite labs” initiative, offering to produce salami by culturing myoblasts from celebrities (www.bitelabs.org). This *in vitro* approach is being explored experimentally but still faces several challenges (Kadim et al. 2015). It is not economically viable (yet) and fails in mimicking the sensory appeal of animal-derived meat, especially with respect to texture and the incorporation of intramuscular fat. Moreover, when Finnish consumers and experts were confronted with the option of laboratory meat in future production systems, a rather unfavourably stance was taken (Vinnari and Tapiro 2009). Similar reactions were obtained in Belgium, Portugal, and the U.K., judging the idea as unnatural, disgust-provoking, risky, and lacking direct personal benefits, despite some potential societal benefits (Verbeke et al. 2015a). Yet, after providing additional information, more favourable attitudes can be obtained (Verbeke et al. 2015b). Interestingly, this was less the case for vegetarians, as they were less convinced that the product might be healthy. Moral opponents also see it as a pseudo-solution as it still involves corporeal intimacy with living tissue (Dilworth and McGregor 2015). Therefore, it may reinforce the symbolic order of anthropocentric instrumental values and promote a postmodern “carnivoracity”.

A second option, encountering similar objections, relates to the genetic engineering of animals with reduced complexity and without capacity to suffer, as to produce pain-free meat (Shriver 2009). To some, this option may seem in line with earlier selective breeding practices towards more docile livestock with less awareness, but it raises nevertheless major ethical issues (Piggins and Phillips 1998). Animals would thus be fully reduced to their Cartesian status of automates (Fairlie 2010, Renton 2013). To a non-speciest vegan as Singer (1975), who’s objection to the killing of animals is based on their ability to suffer, this option is not unproblematic as it would make the farming of brain-dead humans equally acceptable (Fairlie 2010).

Lastly, the use of animals that are perceived as non-sentient may win in importance, in particular the consumption of insects. Entomophagy is a common human activity that has nevertheless become rare in Western countries. Its reintroduction as a protein source is currently being explored but faces still a number of barriers, among which consumer acceptance and legislation (Halloran et al. 2015; Tan et al. 2015).

Meatless Meat and Meat Avoidance

Removing pain and suffering would make animal production and meat-eating acceptable to many, including some animal right activists (Herzog and Golden

2009), but not to those that believe in the idea that animals have an interest in being alive (DeMello 2012; McWilliams 2015). Moral vegetarianism and veganism are of course not new but have become increasingly common over the last decades, although they are still facing the scepticism of an omnivore majority (Fessler et al. 2003). According to Ruby and Heine (2012), the latter seems to be more the case in collectivistic, Asian than in individualistic, Western contexts. The question has been raised whether vegetarians—as opposed to vegans—display incoherent behaviour since the production of milk and eggs is arguably more harmful to animals than the production of meat (Baggini 2014). Moreover, it is unclear how a vegan society would deal with the current stock of domesticated animals as well as with pest control and ecosystem management (Fairlie 2010; Pollan 2002). An even more enhanced separation of human and animal life forms could be required, as well as a further distortion of human–animal interactions. The necessity to kill seems inescapable, implying that humans should instead learn to face killing and do so responsibly (Haraway 2008; Lestel 2011).

Currently, about one-fifth of the world population never eats meat, of which only 5% may be vegetarians by choice (Leahy et al. 2010). The prevalence of deliberate vegetarianism in Western countries is estimated at about 3 to 8%, of which the emergence has often been fairly recent (Higman 2012; Leahy et al. 2010). In the U.K., for instance, vegetarianism was still below 0.5% of the population until the early 1970s but started to increase thereafter, reaching about 1.5–2.0% in the year 2000 (Leahy et al. 2010). Meat avoidance can have many motives other than the moral objection to animal killing (Fessler et al. 2003; Fox and Ward 2008). It can for instance be driven by feminist counteractions to the use of meat in gender categorization (Belasco 2008). It also may result from ecological and food equity concerns, taste preferences, or health motivations, or act as a political statement against corporate capitalism and patriarchy, as in punk cuisine (Clark 2013). Some authors claim that veganism is the only ethically consistent option as we are killing for a food we do not need (McWilliams 2015). Others, however, are more reluctant to dismiss the act of meat-eating as irrelevant, considering its biological and social layers of meaning (Pollan 2006). It certainly is remarkable that vegetarian substitutes consist so often of imitations of meat products (nuggets, burgers, sausages, etc.), at least in Western countries. The topic of “meatless meat” is therefore not only of academic interest (e.g., Elzerman et al. 2011; Hoek et al. 2011; Smetana et al. 2015), but is also bound to become increasingly important on a societal and economic level in the coming years (MarketsandMarkets 2015).

Conclusion

Up until today, the often emotionally upsetting act of animal killing has always been effectively integrated in societal praxis, albeit according to context-dependent strategies. The current exposure of postdomestic meat production systems to the public may lead to an increased repression based on carnism and/or further activate a series of responses of which increased animal welfare measures and meat avoidance are the most prominent ones. In any case, “meat-narratives” will become

increasingly important in a market that is urgently looking for meaning and moral acceptability, even if this trend needs further empirical confirmation and may remain limited to a small interest group. Whereas philosophers and behaviourists will continue to shape ethical positions and societal stances, biotechnologists may try to improve their as yet unsuccessful solutions to take away some of the concerns.

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References

Appleby, M. C. (2005). The relationship between food prices and animal welfare. *Journal of Animal Science*, 83, E9–E12.

Baggini, J. (2014). *The virtues of the table: How to eat and think*. London: Granta Publications.

Bakker, E. J. (2013). *The meaning of meat and the structure of the Odyssey*. Cambridge: Cambridge University Press.

Bastian, B., Loughnan, S., Haslam, N., & Radke, H. R. M. (2012). Don't mind meat? The denial of mind to animals used for human consumption. *Personality and Social Psychology Bulletin*, 38, 247–256.

Baur, G. (2008). *Farm sanctuary. Changing hearts and minds about animals and foods*. New York, NY: Simon & Schuster.

Belasco, W. (2008). *Food: The key concepts*. Oxford: Berg.

Benkheira, M. H. (2000). Artificial death, canonical death: Ritual slaughter in Islam. *Food and Foodways*, 8, 227–252.

Bilewicz, M., Imhoff, R., & Drogosz, M. (2011). The humanity of what we eat: Conceptions of human uniqueness among vegetarians and omnivores. *European Journal of Social Psychology*, 41, 201–209.

Birlouez, E., Laporte, R., & Vieille Blacnchard, E. (2014). *Faut-il arrêter de manger de la viande?*. Paris: Le Muscadier.

Blokhus, H. J., Keeling, L. J., Gavinielli, A., & Serratosa, J. (2008). Animal welfare's impact on the food chain. *Trends in Food Science & Technology*, 19, S79–S87.

Bratanova, B., Loughnan, S., & Bastian, B. (2011). The effect of categorization as food on the perceived moral standing of animals. *Appetite*, 57, 193–196.

Bulliet, R. W. (2005). *Hunters, herders, and hamburgers. The past and future of human-animal relationships*. New York, NY: Columbia University Press.

Clark, D. (2013). The raw and the rotten: Punk cuisine. In C. Counihan & P. Van Esterik (Eds.), *Food and culture: A reader* (pp. 231–244). New York, NY: Routledge.

Coeckelbergh, M., & Gunkel, D. J. (2014). Facing animals: A relational, other-oriented approach to moral standing. *Journal of Agricultural and Environmental Ethics*, 27, 715–733.

Daston, L., & Mitman, G. (2004). *Thinking with animals: New perspectives on anthropomorphism*. New York, NY: Columbia University Press.

Deacon, T. W. (1997). *The symbolic species. The co-evolution of language and the brain*. New York, NY: W.W. Norton & Co.

DeGrazia, D. (2002). *Animal rights*. Oxford: Oxford University Press.

DeMello, M. (2012). *Animals and society. An introduction to human-animal studies*. New York, NY: Columbia University Press.

De Standaard. (2014). http://www.standaard.be/cnt/dmf20141229_01450327/. Accessed February 10, 2016.

Dhont, K., & Hodson, G. (2014). Why do right-wing adherents engage in more animal exploitation and meat consumption? *Personality and Individual Differences*, 64, 12–17.

Dilworth, E., & McGregor, A. (2015). Moral steaks? Ethical discourses of in vitro meat in academia and Australia. *Journal of Agricultural and Environmental Ethics*, 28, 85–107.

Eisnitz, G. A. (1997). *Slaughterhouse: The shocking story of greed, neglect, and inhumane treatment inside the U.S. meat industry*. New York, NY: Prometheus Books.

Eliade, M. (1959/1987). *The sacred and the profane: The nature of religion* (W.R. Trask, Trans.). New York, NY: Harper Torchbooks.

Elzerman, J. E., Hoek, A. C., van Boekel, M. A. J. S., & Luning, P. A. (2011). Consumer acceptance and appropriateness of meat substitutes in a meal context. *Food Quality and Preference*, 22, 233–240.

Fairlie, S. (2010). *Meat. A benign extravagance*. Hampshire: Permanent Publications.

Fessler, D. M. T., Arguello, A. P., Mekdara, J. M., & Macias, R. (2003). Disgust sensitivity and meat consumption: A test of an emotivist account of moral vegetarianism. *Appetite*, 41, 31–41.

Fiddes, N. (1991). *Meat. A natural symbol*. London: Routledge.

Fischler, C. (2001). *L'homnivore. Le gout, la cuisine et le corps*. Paris: Odile Jacob.

Foer, J. S. (2009). *Eating animals*. New York, NY: Little, Brown and Company.

Fox, N., & Ward, K. (2008). Health, ethics and environment: A qualitative study of vegetarian motivations. *Appetite*, 50, 422–429.

Friend, C. (2008). *The compassionate carnivore*. Philadelphia, PA: Da Capo Press.

Gold, T. (2014). <http://www.theguardian.com/commentisfree/2014/jun/19/jeanette-winterson-rabbit-truth-beatrix-potter-tarantino/>. Accessed February 10 2016.

Graça, J., Calheiros, M. M., & Oliveira, A. (2014). Moral disengagement in harmful but cherished food practices? An exploration into the case of meat. *Journal of Agricultural and Environmental Ethics*, 27, 749–765.

Graça, J., Calheiros, M. M., & Oliveira, A. (2016). Situating moral disengagement: Motivated reasoning in meat consumption and substitution. *Personality and Individual Differences*, 90, 353–364.

Griffin, D. (1976). *The question of animal awareness*. New York, NY: Rockefeller University Press.

Halloran, A., Vantomme, P., Hanboonsong, Y., & Ekesi, S. (2015). Regulating edible insects: The challenge of addressing food security, nature conservation, and the erosion of traditional food culture. *Food Security*, 7, 739–746.

Hamerton-Kelly, R. G. (1987). *Violent origins: Walter Burkert, Rene Girard, and Jonathan Z. Smith on ritual killing and cultural formation*. Stanford, CA: Stanford University Press.

Haraway, D. J. (2008). *When species meet*. Minneapolis, MN: University of Minnesota Press.

Herzog, H., & Golden, L. (2009). Moral emotions and social activism: The case of animal rights. *Journal of Social Issues*, 65, 485–498.

Higman, B. W. (2012). *How food made history*. Chichester: WileyBlackwell.

Hoek, A. C., Elzerman, J. E., Hagerman, R., Kok, F. J., Luning, P. A., & de Graaf, C. (2011). Are meat substitutes liked better over time? A repeated in-home use test with meat substitutes or meat in meals. *Food Quality and Preference*, 28, 253–263.

Holloway, L. (2001). Pets and protein: Placing domestic livestock on hobby-farms in England and Wales. *Journal of Rural Studies*, 17, 293–307.

Holm, L., & Mohl, M. (2000). The role of meat in everyday food culture: An analysis of an interview study in Copenhagen. *Appetite*, 34, 277–284.

Hoogland, C. T., de Boer, J., & Boersma, J. J. (2005). Transparency of the meat chain in the light of food culture and history. *Appetite*, 45, 15–23.

Hsiao, T. (2015). In defense of eating meat. *Journal of Agricultural and Environmental Ethics*, 28, 277–291.

Ingold, T. (1994). From trust to domination: An alternative history of human–animal relations. In A. Manning & J. Serpell (Eds.), *Animals and human society* (pp. 1–22). New York, NY: Routledge.

Joy, M. (2010). *Why we love dogs, eat pigs, and wear cows: An introduction to carnism*. San Francisco, CA: Conari Press.

Kadim, I. T., Mahgoub, O., Baqir, S., Faye, B., & Purchas, R. (2015). Cultured meat from muscle stem cells: A review of challenges and prospects. *Journal of Integrative Agriculture*, 14, 222–233.

Kemmerer, L. (2006). *In search of consistency: Ethics and animals*. Leiden, Boston: Brill.

Kenyon, P. M., & Barker, M. E. (1998). Attitudes towards meat-eating in vegetarian and non-vegetarian teenage girls in England—an ethnographic approach. *Appetite*, 30, 185–198.

Korsgaard, C. (2007). Facing the animal you see in the mirror. *Harvard Review of Philosophy*, 16, 2–7.

Korthals, M. (2004). *Before dinner: Philosophy and ethics of food*. Dordrecht: Springer.

Krell, D. F. (2013). *Derrida and our animal others*. Bloomington, IN: Indiana university Press.

Kubberød, E., Dingstad, G. I., Ueland, Ø., & Risvik, E. (2006). The effect of animality on disgust response at the prospect of meat preparation—An experimental approach from Norway. *Food Quality and Preference*, 17, 199–208.

Leahy, M. P. T. (1991). *Against liberation: Putting animals in perspective*. London: Routledge.

Leahy, E., Lyons, S., & Tol, R. S. J. (2010). An estimate of the number of vegetarians in the world. *ESRI Working Paper*, No. 340.

Leroy, F., & Degreef, F. (2015). Convenient meat and meat products. Societal and technological issues. *Appetite*, 94, 40–46.

Leroy, F., & Praet, I. (2015). Meat traditions: The co-evolution of humans and meat. *Appetite*, 90, 200–211.

Lestel, D. (2011). *Apologie du carnivore*. Paris: Fayard.

Loughnan, S., Bastian, B., & Haslam, N. (2014). The psychology of eating animals. *Current Directions in Psychological Science*, 23, 104–108.

Loughnan, S., Haslam, N., & Bastian, B. (2010). The role of meat consumption in the denial of moral status and mind to meat animals. *Appetite*, 55, 156–159.

Lüpke-Narberhaus, F. (2011). <http://www.spiegel.de/international/germany/slaughtered-at-school-german-kids-endure-hare-raising-experience-a-754363.html>. Accessed February 10 2016.

Maehle, A.-H. (1994). Cruelty and kindness to the ‘brute’ creation’. Stability and change in the ethics of the man-animal relationship, 1600–1850. In A. Manning & J. Serpell (Eds.), *Animals and human society* (pp. 81–105). New York, NY: Routledge.

MarketsandMarkets. (2015). *Meat substitutes market by type, source, category, & by region—Global forecast to 2020*. Vancouver, WA: MarketsandMarkets.

Martins, Y., & Pliner, P. (2006). “Ugh! That’s disgusting!”: Identification of the characteristics of foods underlying rejections based on disgust. *Appetite*, 46, 75–85.

McCance, D. (2013). *Critical animal studies*. Albany, NY: State University of New York Press.

McWilliams, J. E. (2005). *A revolution in eating. How the quest of food shaped America*. New York, NY: Columbia University Press.

McWilliams, J. E. (2009). *Just food. How locavores are endangering the future of food and how we can truly eat responsibly*. New York, NY: Hachette Book Group.

McWilliams, J. E. (2015). *The modern savage. Our unthinking decision to eat animals*. New York, NY: Thomas Dunne books.

Mitchell, L. (2011). Moral disengagement and support for nonhuman animal farming. *Society and Animals*, 19, 38–58.

Napolitano, F., Girolami, A., & Braghieri, A. (2010). Consumer liking and willingness to pay for high welfare animal-based products. *Trends in Food Science and Technology*, 21, 537–543.

Ogle, M. (2013). *In meat we trust. An unexpected history of carnivore America*. New York, NY: Harcourt Publishing Company.

Piazza, J., Landy, J. F., & Goodwin, G. P. (2014). Cruel nature: Harmfulness as an important, overlooked dimension in judgments of moral standing. *Cognition*, 131, 108–124.

Piazza, J., Ruby, M. B., Loughnan, S., Luong, M., Kulik, J., Watkins, H. M., et al. (2015). Rationalizing meat consumption. The 4Ns. *Appetite*, 91, 114–128.

Piggins, D., & Phillips, C. J. C. (1998). Awareness in domesticated animals—concepts and definitions. *Applied Animal Behaviour Science*, 57, 181–200.

Pollan, M. (2002). *An animal’s place*. The New York Times, November 10, 2002.

Pollan, M. (2006). *The omnivore’s dilemma. The search for a perfect meal in a fast-food world*. London: Bloomsbury.

Pollan, M. (2013). *Cooked. A natural history of transformation*. New York, NY: The Penguin Press.

Reed, A. Y. (2013). From sacrifice to the slaughterhouse: Ancient and modern approaches to meat, animals, and civilization. *Method and Theory in the Study of Religion*, 26, 111–158.

Regan, T. (1983). *The case for animal rights*. Berkeley and Los Angeles, CA: University of California Press.

Renton, A. (2013). *Planet carnivore*. London: Guardian Books.

Rimas, A., & Fraser, E. D. G. (2008). *Beef: The untold story of how milk, meat, and muscle shaped the world*. New York, NY: HarperCollins.

Rossi, J. L., & Garner, S. A. (2014). Industrial farm animal production: A comprehensive moral critique. *Journal of Agricultural and Environmental Ethics*, 27, 479–522.

Rothgerber, H. (2013). A meat matter. Pet diet and the vegetarian’s dilemma. *Appetite*, 68, 76–82.

Rothgerber, H. (2015). Can you have your meat and eat it too? Conscientious omnivores, vegetarians, and adherence to diet? *Appetite*, 84, 196–203.

Rothgerber, H., & Mican, F. (2014). Childhood pet ownership, attachment to pets, and subsequent meat avoidance. The mediating role of empathy toward animals. *Appetite*, 79, 11–17.

Rozin, P., Markwith, M., & Stoess, C. (1997). Moralization and becoming a vegetarian: The transformation of preferences into values and the recruitment of disgust. *Psychological Science*, 8, 67–73.

Ruby, M. B., & Heine, S. J. (2012). Too close to home. *Factors predicting meat avoidance*. *Appetite*, 59, 47–52.

Saja, K. (2013). The moral footprint of animal products. *Agriculture and Human Values*, 30, 193–202.

Schlosser, E. (2013). The chain never stops. In C. Counihan & P. Van Esterik (Eds.), *Food and culture: A reader* (pp. 485–495). New York, NY: Routledge.

Scully, M. (2002). *Dominion: The power of man, the suffering of animals, and the call to mercy*. New York, NY: St. Martin's Griffin.

Serpell, J., & Paul, E. (1994). Pets and the development of positive attitudes to animals. In A. Manning & J. Serpell (Eds.), *Animals and human society* (pp. 127–144). New York, NY: Routledge.

Shepard, P. (1998). *Coming home to the Pleistocene*. Washington, DC: Island Press/Shearwater Books.

Shriver, A. (2009). Knocking out pain in livestock: Can technology succeed where morality has stalled? *Neuroethics*, 2, 115–124.

Singer, P. (1975). *Animal liberation*. New York, NY: HarperCollins.

Smetana, S., Mathys, A., Knoch, A., & Heinz, V. (2015). Meat alternatives: Life cycle assessment of most known meat substitutes. *International Journal of Life Cycle Assessment*, 20, 1254–1267.

Stephenson, B. (2015). *Ritual*. Oxford: Oxford University Press.

Stockburger, J., Renner, B., Weike, A. I., Hamm, A. O., & Schupp, H. T. (2009). Vegetarianism and food perception. Selective visual attention to meat pictures. *Appetite*, 52, 513–516.

Stull, D., & Broadway, M. (2004). *Slaughterhouse blues: The meat and poultry industry in North America*. Wadsworth/Thompson: Cengage, Belmont, CA.

Tan, H. S. G., Fischer, A. R. H., Tinchan, P., Stieger, M., Steenbekkers, L. P. A., & van Trijp, H. C. M. (2015). Insects as food: Exploring cultural exposure and individual experience as determinants of acceptance. *Food Quality and Preference*, 42, 78–89.

Tian, Q., Hilton, D., & Becker, M. (2016). Confronting the meat paradox in different cultural contexts: Reactions among Chinese and French participants. *Appetite*, 96, 187–194.

Verbeke, W., Marcu, A., Rutsaert, P., Gaspar, R., Seibt, B., Fletcher, D., et al. (2015a). ‘Would you eat cultured meat?’: Consumers’ reactions and attitude formation in Belgium, Portugal and the United Kingdom. *Meat Science*, 102, 49–58.

Verbeke, W., Sans, P., & Van Loo, E. J. (2015b). Challenges and prospects for consumer acceptance of cultured meat. *Journal of Integrative Agriculture*, 14, 285–294.

Vinnari, M., & Tapiro, P. (2009). Future images of meat consumption in 2030. *Futures*, 41, 269–278.

Waldauf, P. (2013). *Animal studies*. New York, NY: Oxford University Press.

Wise, S. M. (2002). *Drawing the line: Science and the case for animal rights*. Cambridge, MA: Perseus.